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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,873	10/01/2004	Koichi Hikida	07241.0031	9711
22852	7590	10/23/2006	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			DOUGHERTY, THOMAS M	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

ST

Office Action Summary	Application No.	Applicant(s)	
	10/509,873	HIKIDA ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-25, 29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-25, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23-25, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masatomo et al. (JP 08-160067) in view of Naotaka (JP 04-258713). Masatomo et al. show (figs. 1a, 3, 4, 5a, 5b, 6a, 7, 8a-8d) a tilt sensor comprising: a deflectable plate (1a, 1b, 51a, 51b) having piezoresistors (RX1-RX4, RY1-RY4) formed on its surface; a support member (e.g. see support connected to 51a in figs. 8b, 8c) for supporting said deflectable plate (1a, 1b, 51a, 51b) at one end of said deflectable plate (1a, 1b, 51a, 51b); and a weight member (e.g. see underside of top surface of 51b) arranged in a deflectable area of said deflectable plate (1a, 1b, 51a, 51b), in which: said piezoresistors (RX1-RX4, RY1-RY4) have: a first piezoresistor group including two pairs of piezoresistors (RX1-RX4) arranged in the positions inside the deflectable area of said deflectable plate (1a, 1b, 51a, 51b) and symmetric with respect to a center line going through a middle point of width of said deflectable plate (1a, 1b, 51a, 51b); and a second piezoresistor group including two pairs of piezoresistors (RY1-RY4) arranged in the positions inside the deflectable area of said deflectable plate (1a, 1b, 51a, 51b), symmetric with respect to said center line and different from the positions of the piezoresistors in said first piezoresistor group (RX1-RX4), and constitute a first full

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bridge circuit (fig. 4) with said first piezoresistor group and a second full bridge circuit (fig. 4) with said second piezoresistor group (RY1-RY4).

Aside from their piezoresistors' arrangement, Masatomo et al. do not indicate any further calculation means, though, for the device to perform useful work, it is implicit. Masatomo et al. don't show a half-bridge circuit comprised of their second group of piezoresistors.

Naotaka shows (abstract figure) or notes (CONSTITUTION) a tilt sensor comprising: piezoresistors (5a-5d); a support member (1) for supporting and a weight member (4); Naotaka notes that "the tilt angle in the longitudinal and lateral directions can be detected by detecting the distortion by the piezoresistor elements 5a, 5b, 5c and 5d".

Naotaka does not show a deflectable plate or a half bridge or full bridge circuits.

It would have been obvious to one having ordinary skill in the art to use the full bridge circuits of Masatomo et al. to determine the tilt angles in their device in order to allow that device to perform useful work as Naotaka teaches.

Regarding recitation of the half-bridge circuit, it would have been obvious to one having ordinary skill in the art to employ a half-bridge circuit in the device of Masatomo et al. since it has been held that the omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184.

Regarding recitation of an azimuth sensor for detecting an azimuth, comprising the tilt sensor and including earth magnetism detecting means, at least biaxial, for

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detecting geomagnetic components in orthogonal directions; and azimuth calculating means for calculating an azimuth based on tilt angle data obtained by the tilt sensor and geomagnetic data obtained by the earth magnetism detecting means and further recitation of cellular phone comprising the azimuth sensor, these are not further limiting to the invention of the tilt sensor but instead are intended use and therefore carry no patentable weight. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

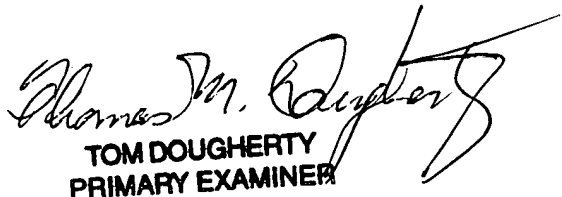
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Remaining prior art cited reads on at least some aspects of the claimed invention.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd
tmd

September 18, 2006


TOM DOUGHERTY
PRIMARY EXAMINER